Testimony of

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The Role of Intercity Passenger Rail in Reducing Greenhouse Gas Emissions

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Introduction
Good morning. Chairwoman Brown and Ranking Member Shuster, thank you for the opportunity to appear today before the Railroads, Pipelines, and Hazardous Materials Subcommittee of the House Transportation and Infrastructure Committee to discuss the benefits of passenger rail, and its role in addressing global warming. My name is Colin Peppard and I am the Transportation Policy Coordinator for Friend of the Earth. Friends of the Earth is a national advocacy organization in the United States founded in 1969 and the U.S. arm of Friends of the Earth International, the world's largest environmental federation, with groups in more than 70 countries worldwide.

Global Warming and Transportation
The transportation sector in the United States is a significant consumer of energy and an enormous source of global warming pollution. Currently, nearly one-third of total U.S. carbon dioxide (CO_2) emissions, the primary cause of global warning, originate from our transportation sector[1]. Cars, trucks and other "on-road" vehicles account for approximately 80 percent of all transportation-based CO_2[2]. While efforts to increase vehicle efficiency and develop low-carbon alternative fuels will help reduce these numbers, these policies only take us part of the way to the CO_2 reductions necessary to stabilize our climate.

Unfortunately, U.S. transportation policy overwhelmingly favors highway and road projects over low-carbon, non-highway alternatives such as passenger rail and transit. As a result, the total number of miles Americans drive each year is forecast to increase 50 and 60 percent by 2025[3]. At this rate, even if Congress adopted the strict clean cars standards that have been proposed in California, estimates show that transportation-sector CO_2 emissions would still increase nearly 18 percent over that time period[4].

To meaningfully address global warming, we must provide Americans with low-carbon, energy-efficient transportation alternatives that can help them reduce the amount they drive each day. Several recent trends indicate that Americans are demanding such alternatives to automobiles, and will change their transportation choices when both incentives and sound alternatives exist. In 2005, amidst rising gas prices, both Amtrak and numerous transit systems around the country experienced record levels of ridership. That same year, Americans drove less per capita for the first time in twenty-five years. The following year, in 2006, U.S. voters approved 70 percent of local referenda to fund transit services, and states dedicated significant amounts of new money to passenger rail service[5].

Congress should encourage these trends on a broader scale. By promoting efficient alternatives to the automobile and other strategies, we can address transportation-based CO_2 emissions, as well as a host of other problems including air and water pollution, oil consumption, and poor land use. At the local level, this means developing transit systems such as light rail, commuter rail, and rapid bus service. For longer-distance intercity travel, especially for trips between 50

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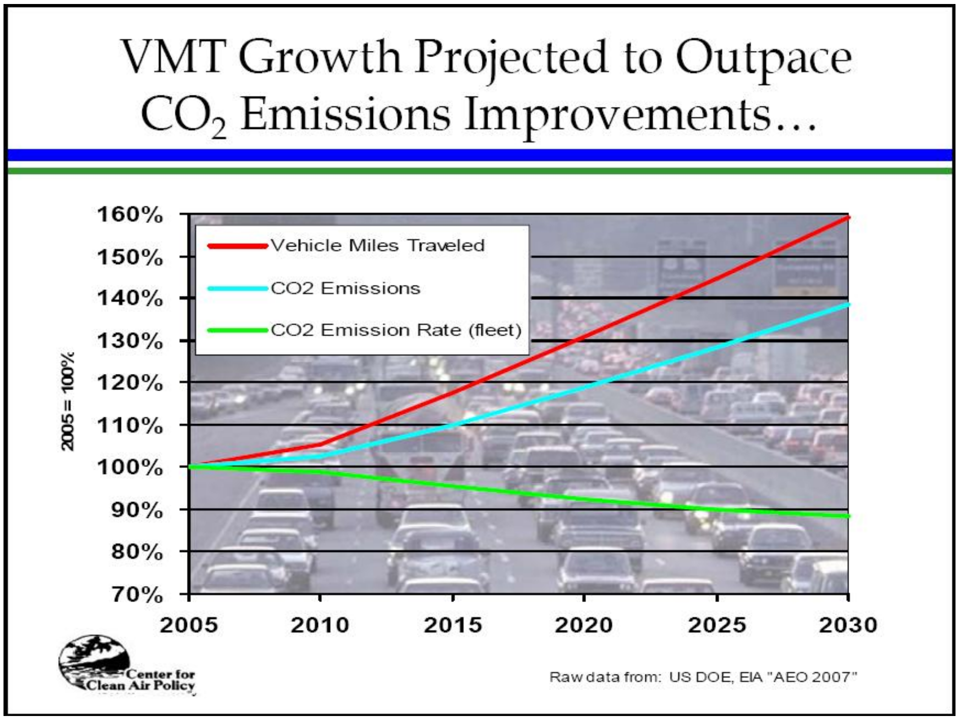
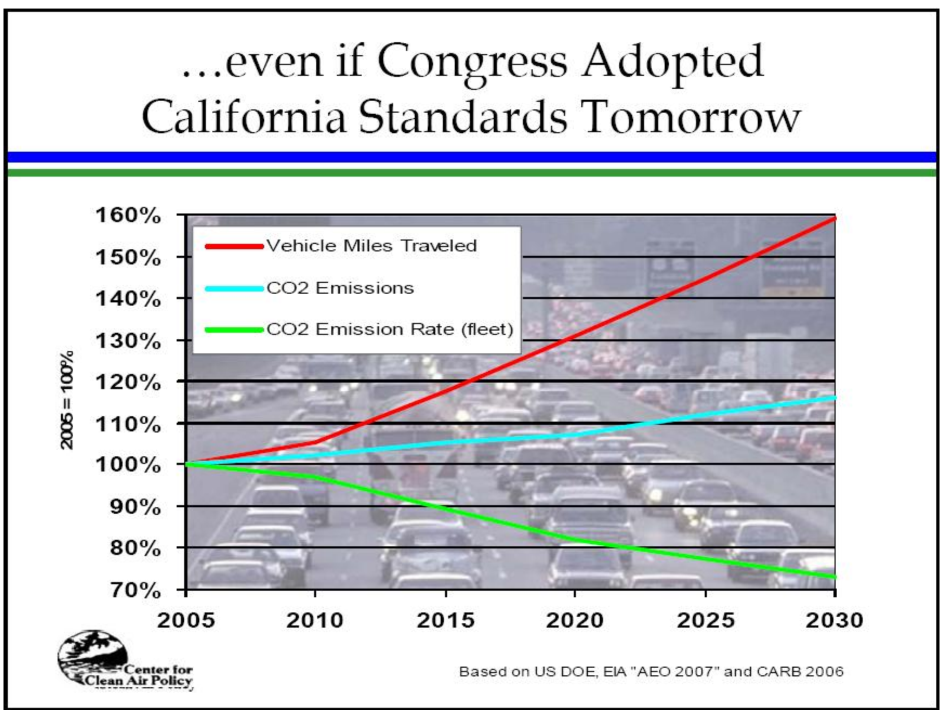
[1] Energy Information Agency
[2] Transportation Energy Data Book (Edition 26)
[3] Polzin, Steven E., Ph.D. Center for Urban Transportation Research. 2006
[4] Winkleman, Steven. Center for Clean Air Policy. 2006
[5] Center for Transportation Excellence. 2006.

and 500 miles, passenger rail, such as the service provided by Amtrak and several state transportation departments, is an energy-efficient option that can help reduce the CO_2 emissions of long-distance travel.





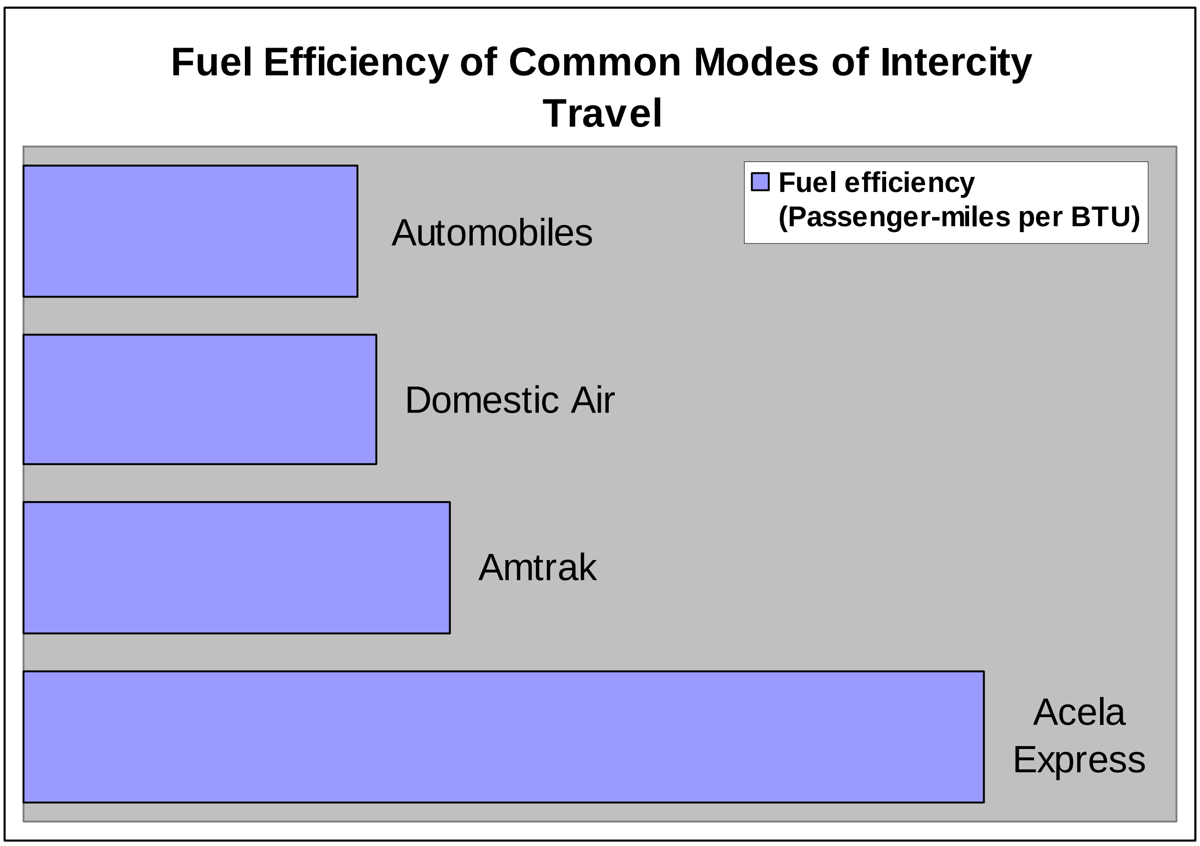
Graphs courtesy Center for Clean Air Policy

Long-Distance Travel in the U.S.

In 2001 (the most recent year for which complete data is available), Americans took about 2.6 billion long-distance trips (defined as intercity trips of more that 50 miles one way) totaling over 1.1 trillion miles[6]. Ninety-seven percent of those trips were taken by airplane or automobile, emitting at least 400 million metric tons of CO_2. This is equivalent to the annual CO_2 emissions from about 130 medium-sized (300-500 megawatt) power plants. Ninety percent of all long-distance trips and 95 percent of trips between 50 and 500 miles are taken by personal automobile, and the average length of a long-distance trip is 194 miles[7]. More Americans are commuting to work over long distances as well, with twenty-two percent of long-distance trips between 50 and 99 miles for commuting[8].

Passenger Rail, Fuel Efficiency, and Carbon Dioxide Emissions

For this type of long-distance trip, passenger trains offer Americans a more energy-efficient option that emits less CO_2 than automobile travel. On average, an Amtrak train is 27 percent more efficient per passenger-mile than automobile travel, and 20 percent more efficient per passenger-mile than domestic airline travel[9]. In other words, Amtrak uses 17 percent less energy per passenger-mile than airlines and 21 percent less energy per passenger-mile than autos.



Source: Transportation Energy Data Book and Amtrak internal information

[6] Transportation Energy Data Book (Edition 26)
[7] U.S. Bureau of Transportation Statistics: National Household Travel Survey, 2001.
[8] U.S. Bureau of Transportation Statistics: National Household Travel Survey, 2001-2002.
[9] Transportation Energy Data Book (Edition 26)

The efficiency of a transportation mode is directly related to its CO_2 emissions, meaning that a passenger train emits at least one fifth less CO_2 per passenger mile than air travel and a quarter of the CO_2 per passenger mile than automobile travel. Driven by electricity produced at large-scale, centralized power plants, electrified trains such as Amtrak's Acela express are even more efficient, further cutting CO_2 emissions. Though no government data exists to measure the efficiency of electrified trains, technical specifications for the Acela trainsets show that these trains are more than twice as efficient as traditional Amtrak trains. As renewable energy becomes a large part of the electricity mix in the U.S., and as more standards requiring its development are put in place, the amount of CO_2 caused by electrified passenger trains will continue to fall. Further, Acela Express and other electric locomotives have begun using regenerative braking systems, which return electricity back to the electric grid. This has enabled Amtrak to reduce energy consumption -- and CO_2 emissions -- by eight percent[10]. Finally, if and when carbon capture and sequestration technologies become commercially viable, it is easier to control emissions from a large stationary power plant than from many small mobile sources.

Passenger rail travel offers additional benefits that are difficult to capture in statistical data. Rail often stimulates development at and around stations that is higher in density than traditional development, with a mix of residential and commercial land use. Stations are also frequently connected to other forms of mass transportation which are also more efficient that automobiles. This style of development encourages walking, cycling, and transit use, all of which further reduce CO_2 emissions from the transportation sector.

In practice, Amtrak's energy efficiency has a substantial positive impact on CO_2 emissions per passenger-mile. In 2005, Amtrak carried more than 5.2 billion passenger-miles, putting out approximately 670 thousand metric tons of CO_2. Had these miles been logged in airplanes or automobiles, CO_2 emissions would have been 20 to 27 percent greater, amounting to approximately 820 thousand metric tons.

Potential of Passenger Rail to Reduce Carbon Dioxide Emissions

Energy-efficient, high speed passenger trains move passengers swiftly and safely between cities around the world. Passenger rail networks abroad are far more developed than in the U.S. however, and offer travelers a competitive transportation option, especially for trips in the range of 50-500 miles. We can see the potential for the use of passenger trains in the U.S along rail routes such as the Northeast corridor, between Boston and Washington, D.C. High speeds and frequent trains make this corridor highly competitive with both highway and air travel options between these cities. The result is that the Northeast Corridor accounts for the majority of Amtrak use, even though it represents only a small percentage of Amtrak's total route system.

One useful way of looking at the potential of passenger rail to reduce CO_2 emissions in the transportation sector is to estimate the equivalent number of cars the average Amtrak train takes off the road, based on CO_2 emissions. A full Amtrak train removes the CO_2 equivalent of 250-350 cars from the road.

[10] Amtrak 2006 energy use data

The Potential of Biofuels to Further Reduce Emissions

Amtrak currently uses more than 66.6 million gallons of diesel fuel each year[11]. Although passenger trains use energy more efficiently than other forms of transportation, Amtrak's diesel fuel consumption still emits more than 1.3 million metric tons of greenhouse gases each year. Utilizing clean, renewable, sustainably-produced fuels such as biodiesel will improve the environmental performance of passenger rail in the U.S. Biodiesel can reduce carbon dioxide emissions by as much as 78 percent over petroleum diesel[12]. A ten percent blend of biodiesel and conventional petroleum diesel would therefore reduce CO_2 emissions from passenger rail travel by an additional 7.8 percent. With trains running on 10 percent biodiesel, running a full Amtrak train would be equivalent to taking 450-600 cars off the road. And unlike other biofuels, biodiesel use in locomotives requires no expensive modifications, and generally works with few modifications at all. In tests by the National Renewable Energy Laboratory, no operational problems were encountered using biodiesel in passenger locomotives[13].

In fact, rail service providers in the U.S. and around the world are currently using biodiesel in passenger locomotives. In 2003, a Brazilian rail company decided to run its 580 trains on 20 percent biodiesel, and in May 2006, Britain's Virgin rail service announced plans to run 78 trains on 15 percent biodiesel. In the U.S., three month experiment conducted by Tri-County Commuter Rail Authority in Florida found that it was possible to run locomotives on 100 percent biodiesel, and New Mexico's Rail Runner Commuter Rail currently operates on a 20 percent blend of biodiesel. Unfortunately, unless changes are made, the use of biofuels often voids the manufacturers' warranty on the engine, creating a barrier to their use.

The Future of Passenger Rail as a Strategy to Fight Global Warming

Amtrak and passenger rail service in the U.S. currently provides an intercity transportation option that is more efficient than most other forms of long-distance travel. While all passenger rail travel compares favorably to auto and air travel, corridor trains that run along 50-500 mile intercity corridors offer the most potential. Corridor trains regularly carry far more passengers, and they hold the greatest potential for ridership growth via new, faster, better, and/or more frequent service. This is where most of the potential for CO_2 benefits exist, since the car trips this service would replace are more frequent by nature (commuting, business travel, regular long distance travel), and the short air trips this service would replace are the most fuel inefficient (most of the energy consumption in air travel occurs during take off). These corridors also have the greatest potential for electrification and low-carbon biofuel use.

Unfortunately, for many Americans, passenger rail travel in the U.S. is not currently a viable option. Amtrak's service is unreliable along many routes, due to conflicts with freight rail companies. Frequency of service is insubstantial in many places; some stations are only serviced once or twice a day, sometimes in the middle of the night. Many areas of the country lack rail service altogether. However, the success of other rail systems around the world shows us that if a good product is offered, ridership will be high, and mobility will be increased. To accomplish this, investments must be made to improve service frequencies, increase speeds, expand service

[11] Transportation and Energy Data Book (Volume 26)
[12] National Biodiesel Board
[13] NREL Evaluation of Biodiesel Fuel in an EMD GP38-2 Locomotive

areas, and refurbish stations. With strong state and federal support, we can develop a robust system of high-speed, energy-efficient intercity passenger rail service that can reduce CO_2 emissions, helping us to meet the challenge posed by global warming.

Thank you again for the opportunity to testify, and I look forward to answering any questions the subcommittee may have.